MULTIPLE SIM CARD OPERATION OF AN ELECTRONIC DEVICE

CROSS-REFERENCE TO RELATED APPLICATION

[0001] This application is a non-provisional application claiming priority to U.S. Provisional Application No. 62/910,843, entitled "MULTIPLE SIM CARD OPERATION OF AN ELECTRONIC DEVICE," filed Oct. 4, 2019, which is hereby incorporated by reference in its entirety for all purposes.

BACKGROUND

[0002] The present disclosure relates generally to electronic devices, and more particularly, to electronic devices that utilize radio frequency signals, transmitters, and receivers in various processes, such as cellular and wireless communication processes.

[0003] This section is intended to introduce the reader to various aspects of art that may be related to various aspects of the present disclosure, which are described and/or claimed below. This discussion is believed to be helpful in providing the reader with background information to facilitate a better understanding of the various aspects of the present disclosure. Accordingly, it should be understood that these statements are to be read in this light, and not as admissions of prior art.

[0004] Wireless communication systems are rapidly growing in usage. In recent years, wireless devices such as smartphones and tablet computers have become increasingly sophisticated. In addition to supporting telephone calls, many mobile devices now provide access to the internet, email, text messaging, and navigation using the global positioning system (GPS), and are capable of operating sophisticated applications that utilize these functionalities.

[0005] Transmitters and/or receivers may be included in various electronic devices to enable communication between user equipment (e.g., user electronic devices, transmitting or receiving electronic devices) and core networks on said wireless networks, deployed through a variety of technologies including but not limited to access network base stations (e.g., network access nodes), such as an eNodeB (eNB) for long-term evolution (LTE) access networks and/or a next generation NodeB (gNB) for 5' generation (5G) access networks. In some electronic devices, a transmitter and a receiver are combined to form a transceiver. Transceivers may transmit and/or receive wireless signals by way of an antenna coupled to the transceiver, such as radio frequency (RF) signals indicative of data. Indeed, a transceiver may include a subscriber identification module (SIM) card to communicate with a core network of a provider. The transceiver, however, may not have the capability to use multiple SIM cards to simultaneously communicate with multiple core networks.

[0006] By way of example, an electronic device may include a transceiver to transmit and/or receive the RF signals over one or more frequencies of a wireless network. The information to be transmitted is typically modulated onto the RF signal before transmission. In other words, the information to be transmitted is typically embedded in an envelope of a carrier signal that has a frequency in a frequency range of a network being used for communication. To embed or extract the information in or from the envelope of the carrier signal, processing may be performed on a received RF signal according to transmission parameters. For example, an electronic device (e.g., user equipment) may demodulate the RF signal (e.g., to remove the carrier signal) to recover the embedded information in the envelope based on a frequency of the received RF signal.

[0007] The transmission parameters and other settings, such as information used to authenticate an electronic device to a network, may be provided to the electronic device by way of a subscriber identification module (SIM) card and/or by way of an embedded SIM (eSIM) that includes a digital information sometimes included in a SIM card that permits activation to a cellular plan from a carrier without having use a physical SIM card. The SIM card (or eSIM) enables the electronic device to communicate with a core network of a provider. The core network may be a wireless network, such as Wi-Fi or Ethernet, that facilitates the wireless transmission of information between the electronic device and the provider. In some cases, it may be desired to communicate with two or more core networks using the same electronic device. To do so, multiple SIM cards may be installed in the same electronic device.

[0008] However, when an electronic device tries to use multiple SIM cards, issues sometimes arise, including missed communications (e.g., missed paging notification) and/or device unavailability. For example, when a first SIM card of the electronic device is active, a second SIM card of the electronic device may deactivate and be unavailable. As such, if a core network transmits a paging notification to the second SIM card while the first SIM card is active (where the paging notification may initiate a communication window that enables the second SIM card to communicate with the core network), the second SIM card may miss the paging request and/or may not respond to an incoming data packet from the core network because the second SIM card may be unavailable.

SUMMARY

[0009] A summary of certain embodiments disclosed herein is set forth below. It should be understood that these aspects are presented merely to provide the reader with a brief summary of these certain embodiments and that these aspects are not intended to limit the scope of this disclosure. Indeed, this disclosure may encompass a variety of aspects that may not be set forth below.

[0010] Embodiments of the present disclosure generally relate to a transceiver of an electronic device (e.g., user equipment) that receives and/or transmits wireless data signals, such as radio frequency (RF) signals. In certain embodiments, the transceiver may include RF circuitry (e.g., Wi-Fi and/or LTE RF circuitry, front end circuitry) that is used, for example, to support transmission and/or reception of RF signals that follow various wireless communication standards or additional communication standards. The RF circuitry may include two or more subscriber identification module (SIM) cards, such as physical SIM cards and/or embedded SIM (eSIM) cards. A SIM card enables the electronic device to communicate with a core network of a network provider via base stations (e.g., network access nodes), and an eSIM card includes similar or same information as the SIM card but is embedded in the phone as to not specifically be a physical SIM card removable from the hardware. The core network may be a cellular network (e.g., long term evolution (LTE), 3rd Generation (3G), 4th Gen-